



1999

The Quality of the Environment in South Carolina

South Carolina Department of Health & Environmental Control

View from Bay Street, Beaufort

Introduction

This report is based on information collected as part of the S.C. Department of Health and Environmental Control's (DHEC's) monitoring and data gathering programs. The report allows us to evaluate trends and determine future needs and challenges so that appropriate environmental policies can be established. Where possible, graphs and charts are provided to illustrate the data and to show trends. The 1998 data presented in this book is the most current data available.



This report gauges our efforts to reach and surpass environmental goals and standards. It provides an opportunity to critically look at our environmental data so that successes can be illustrated and areas needing improvement can be identified.

The information in this report will hopefully guide the reader to the realization that we all impact our environment through many daily activities — and that we also have the means to minimize those impacts. This report should also help us recognize the importance of environmental protection, not only for the sake of the environment, but also as a direct link in public health protection. For more information and for copies of other reports cited in this report, DHEC's home page can be accessed on the World Wide Web at www.state.sc.us/dhec/.

A Message from the Commissioner

In this, our third edition of *The Quality of the Environment in South Carolina*, we hope to shed light on many of the challenges we face as an agency and as a state in protecting the health of our environment. As you review this report, you will see that these challenges are outlined with respect to each area of environmental protection: our coast, our land, our water and our air. But in addition to what DHEC is working to achieve in these respective areas, each challenge highlighted in this report presents unique opportunities for South Carolinians to become directly involved in the protection of our resources and, in turn, protection of our public health.

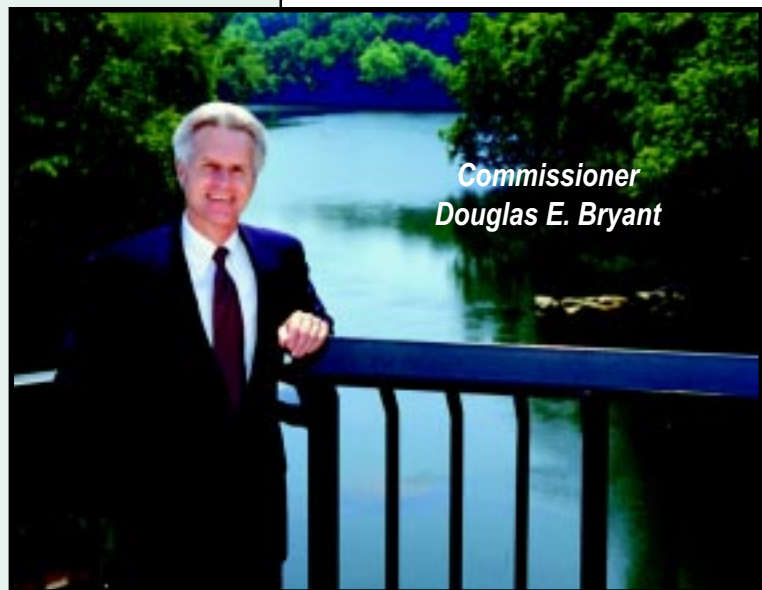
What does environmental protection have to do with public health? Everything.

Here in South Carolina, our public health agency and our environmental protection agency are combined. Our belief is that this combination is essential if we, as a state, are to effectively protect the health of our people and the environment in which we live. Our public health mission and challenge is to have healthy people living in healthy communities in a healthy environment. And that includes all people, all communities and the total environment.

I ask you to take a look at the challenges we face in protecting our coastal resources in the midst of a population explosion. Think about the challenges of properly managing the waste we create on a daily basis and how that management affects the quality of our land. Consider the challenges of addressing nutrient enrichment in our water bodies resulting from wastewater, fertilizers and storm water runoff. Realize the challenge before each of us to reduce the activities that contribute to the production of ground-level ozone and directly affect the quality of the air we breathe.

And understand that our future depends upon a dedication to sustainable communities—that is, communities that are planned and developed with a concern for maintaining the natural beauty that makes South Carolina such a special place to live.

Thomas Jefferson once stated, “The earth belongs to each generation during its course, fully and in its own right. No generation can contract debts greater than may be paid during the course of its own existence.” More than 200 years later, may we heed this advice and use it as a basis for meeting the challenges that will ensure a healthy, prosperous future for the people of this state and the environment in which we live.



Commissioner
Douglas E. Bryant

Table of contents

A Message from the Commissioner	2
Coast	4
How we evaluate our coastal resources	4
What does this information tell us?	4
What are we doing to improve?	6
Coastal Challenges	7
Land	9
How we evaluate our land resources	9
What does this information tell us?	9
What are we doing to improve?	11
Land and Waste Challenges	13
Water	15
How we evaluate our water quality	15
What does this information tell us?	16
What are we doing to improve?	18
Water Quality Challenges	20
Air	22
How we evaluate our air quality	22
What does this information tell us?	22
What are we doing to improve?	23
Air Quality Challenges	24
Environmental Services	26
Information Resources	27
Environmental Quality Control District Offices	28

Acknowledgments

The writing, editing and production of *The Quality of the Environment in South Carolina* each year takes significant effort from many Environmental Quality Control and Ocean & Coastal Resource Management staff.

Specific thanks go to the committee of people in DHEC who collected, compiled and wrote the information that appears in this report: **Larry McCullough, Kim Newell, Richard Chesley, Renee Shealy, Mike Robertson, Ronny Rentz, Lill Mood, Scott Reynolds and Elizabeth Boland**. Thanks also go to those who proofread and made suggestions that improved this report.

Editor: **David Baize**, Bureau of Water

Graphic Design/Artwork:
Cristi Horne, Communication Resources

Front and Back Cover Photos:
Deborah Young, Communication Resources

Inside Photos:
Joel Hand, Tedd Scott, Mike Suber, Deborah Young,
Communication Resources

Coordinator:
Jan Easterling, Division of Media Relations

Printed September 1999

Total Printing Cost - \$6,748.35
Total Number of Documents Printed - 5,000
Cost Per Unit - \$1.35

State Officials

Jim Hodges
Governor

Robert L. Peeler
Lieutenant Governor

Douglas E. Bryant
Commissioner
SC DHEC

R. Lewis Shaw, PE
Deputy Commissioner
Environmental Quality
Control

Board of Health and Environmental Control

Brad Wyche
Chairman
At-large

Howard Brilliant, M.D.
1st District

Brian K. Smith
2nd District

Rodney L. Grandy
3rd District

Mark B. Kent
4th District

William M. Hull, Jr., M.D.
5th District

Larry R. Chewning, Jr.,
D.M.D.
6th District



Coast

How we evaluate our coastal resources

The South Carolina coast is a magical place. It's 182 miles of wide, sandy beaches and 200,000 acres of salt water marsh. It is not only the irreplaceable home for fish, birds, and shellfish, but also the place that more than 866,000 people in the state call "home."

The allure of the ocean is not dwindling. A recent report estimates that at least 500,000 new residents are expected to move to the eight coastal counties of South Carolina within the next 20 years. However, residents are not the only ones to know about the beauty of the coast. Recent estimates show that approximately 17.7 million visitors a year enjoy the beauty and grace that make up the South Carolina coast.

To better understand our coastal resources, information is collected each year on population, beach and sand dune movement, estuarine and near-beach ocean water quality, coastal plain groundwater quantity and quality, and shellfish growing areas. The challenge before us is to make sure that we manage the growth of this booming area so that the beaches, wetlands and waterways aren't overwhelmed by negative byproducts of this unprecedented growth.

What does this information tell us about our coastal environment?

Beaches

In several areas of the state, the beaches are getting bigger. The most noticeable project was the completion of the \$54 million Myrtle Beach and Grand Strand Beach Renourishment Project. This massive project renourished 26 miles of Grand Strand beaches from North Myrtle Beach to Garden City by placing 5 million cubic yards of sand on the beaches. Beginning in 1996, the Grand Strand Renourishment Project was the largest beach renourishment project ever constructed in South Carolina. Although the

Grand Strand project is the largest renourishment project in the state, it was not the only place that saw wider beaches. Several other coastal communities also pumped sand on their beaches in 1998. The community of Debordieu spent \$1.2 million to renourish 1.5 miles of beach. Pawleys Island spent \$1.2 million for 2.5 miles of renourishment, and Daufuskie Island renourished 3.5 miles of beach at a cost of \$6 million. A similar but much smaller-scale renourishment and groin restoration project was completed at Sullivan's Island, using a combination of state and local funding.

While some beaches were getting larger, others were quickly drifting back into the sea. Winter storms caused massive beach erosion at Hunting Island State Park in Beaufort County, Edisto Beach State Park in Colleton County and Folly Beach County Park in Charleston County. Since most or all of the protective sand dunes have been washed away at these parks, these beaches face the possibility of even greater destruction in the future. An episode of extreme beach erosion that began in 1995 in the Wild Dunes section of the Isle of Palms has ended, and the area hit hardest there has started to recover.

Beach Lines

The Beachfront Management Act requires that every 10 years DHEC's Office of Ocean and Coastal Resource Management (OCRM) assess the current beachfront setback lines and make adjustments as needed. 1999 is the start of that 10-year cycle. Staff members are required to study the beach lines for all of the South Carolina coast and decide if the setback lines will be moved landward, seaward, or remain the same.

Each year, DHEC charts changes in the beaches as an indicator of their health. As detailed in the latest report, about 40 percent of the South Carolina coastline is stable or increasing; about 40 percent is eroding less than 3 feet per year, and about 20 percent is eroding at more than 3 feet per year.

Salt Marshes

In recent years we have seen more and more development along South Carolina's salt water marshes. The beautiful vistas and the desire to "live on the water" have caused unprecedented growth in the coastal regions. In 1998 the state issued a record number of dock permits for Beaufort, Jasper and Charleston counties. As man encroaches on these areas, controlled growth is necessary. Salt water marshes and mud flats along the coast are critical nursery habitats for many species of fish, crabs and shrimp. These areas also provide feeding grounds for wading birds and other wildlife that depend on the salt water marsh for their existence. Once again, the key is to develop plans of managed growth so that man and nature can enjoy these areas for many generations.

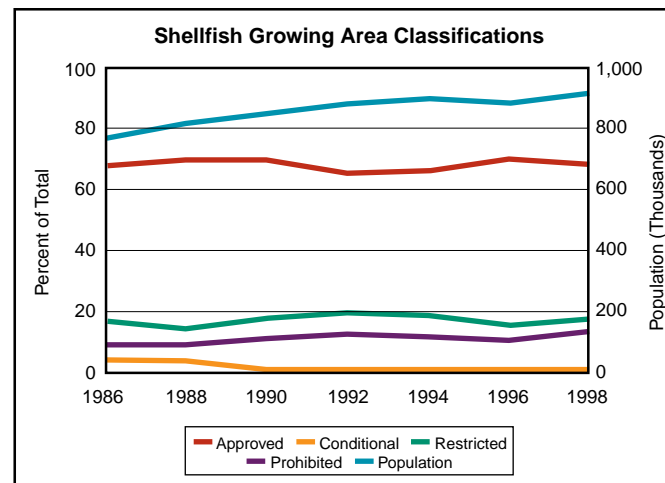
Shellfish

Approximately 69 percent of the state's 570,304 acres of coastal shellfish growing waters are approved for safe shellfish harvesting. Of all potential shellfish harvesting waters, 17 percent (96,824 acres) are closed solely due to unsuitable water quality. An additional 76,309 acres are administratively closed because of unsuitable water quality or a potential for contamination from nearby marinas and point source discharges. South Carolina's classification system for shellfish harvesting waters is consistent with guidelines established by the U.S. Food and Drug Administration's National Shellfish Sanitation program.

Ocean Water Quality Monitoring

During 1998 and 1999, several beach communities have continued, with DHEC oversight, a voluntary surf water quality monitoring program with advisories issued for swimmers when necessary. Earlier sampling determined that on beaches with stormwater drains, bacterial levels in the surf increased after heavy rains. The summer of 1998 saw very little rainfall, and there were no advisories issued.

In fiscal year 1999, DHEC received a one-time appropriation from the S.C. General Assembly to conduct a similar monitoring and advisory program. Samples are collected in the Grand Strand area to complement communities' efforts. DHEC has requested continued funding for this program.



Groundwater Capacity Use and Salt Water Intrusion

The South Carolina Coastal Plain includes nearly 28 counties from the fall line to the shoreline of the Atlantic Ocean, an area of approximately 20,000 square miles. Groundwater users in the South Carolina Coastal Plain withdraw approximately 350 million gallons per day from the aquifer system. These withdrawals are expected to increase to nearly 500 million gallons per day by the year 2020. As a result of increasing groundwater withdrawals, water levels in the aquifer system are declining in some areas of the Coastal Plain. Continued withdrawal of freshwater faster than the aquifer is recharged may lead to salt water intrusion in the coastal portion of the aquifer system.

To understand the relationship between groundwater withdrawals and water level declines, DHEC monitors, or reviews data, for numerous wells in the South Carolina Coastal Plain. In areas where the aquifer is near depletion or could be depleted because of unique geological conditions, or an area that could be contaminated by salt water from overpumping, a capacity use area may be declared. Permits must be obtained from DHEC to allow withdrawal of groundwater if use exceeds 100,000 gallons per day, 1 million gallons per month, or 10 million gallons per year. This type of management is in effect for two areas of the South Carolina Coastal Plain (Waccamaw and Low Country) under the Groundwater Use Act.

Planning for Growth in Coastal Areas

The Special Area Management Plan (SAMP) program is a coastal management planning process that considers and recommends modifications to general coastal zone management policies where local conditions or circumstances call for special measures. The Planning Division of DHEC's OCRM is currently coordinating development of two SAMPs, both of which are focused on impacts associated with rapid growth and development in coastal communities. *(For more information on the Beaufort SAMP, see page 15.)* The Charleston Harbor Project is a multiyear program of applied research leading to the preparation of a management plan for the Charleston metropolitan area. This SAMP is in its last stages of development.

Over the last few years, local citizens, business people, scientists and government officials met to define issues the SAMP should address. Based on these meetings, more than 60 research projects were funded and conducted, many of which made findings of national significance. This

continued on page 6

past year, the Management Committee of the SAMP met several times to refine the recommendations from the research. This year, the Management Plan will be written, with the final plan to be completed in the fall.

The Beaufort SAMP process will be a 30-month effort focusing on growth-related water quality issues in Beaufort County. This last year saw the formation of three committees: the Oversight Committee, the Policy Advisory Committee and the Technical Advisory Committee. These committees include local citizens and representatives of various industries, government agencies and organizations. A work plan was completed and approved that outlines five major areas of focus. These are

- 1) stormwater management,
- 2) wastewater management,
- 3) water quality monitoring and enforcement,
- 4) boating impact management, and
- 5) public involvement and education.

Groundwater withdrawals are increasing throughout the Coastal Plain in all major categories of use. Trends associated with population growth, industrial growth, and increased irrigation requirements indicate the demand for groundwater will continue to increase. The increase in groundwater withdrawals, with the exception of the two capacity use areas, is not currently regulated and, if left unchecked, could have a negative impact on both the quantity and quality of groundwater available for future generations.

What are we doing to improve?

Beaches

Because of the massive erosion problems on Hunting Island, DHEC has designated Hunting Island State Park as the number one priority for beach renourishment in 1999. It will not be a cheap project. Under a plan developed by OCRM and the S.C. Department of Parks, Recreation and Tourism, the two-year renourishment project will cost \$9 million. However, since this beachfront park is the only publicly owned beach access destination for residents and tourists in Beaufort County, it is a vital project.

The state's second beach renourishment priority will be the Edisto Beach State Park. Preliminary estimates have the beach renourishment project costing about \$7 million for renourishment of all of Edisto Island.

Since the issue of beach renourishment is going to be an ongoing project in South Carolina (most renourishment projects last only 10 years), DHEC is asking the S.C. General Assembly to allocate up to \$5 million every year to a beach renourishment bank. Under the plan, the money will allow local governments to draw money from the bank, put up matching funds, and renourish their beaches when needed. This will help governments plan in advance for beach renourishment and also ensure that the needed funds will be there when the projects are needed.

Sand Dunes

One of the greatest ways to protect homes and property from the raging sea is to have a strong sand dune system in place. These dunes absorb ocean tides and keep low-lying

areas from flooding, so it is important that sand dunes remain in place along the coast. OCRM is helping to protect the dunes by issuing, free of charge, "Please keep off the Dunes" signs for property owners. The office also is working with cities and counties to build dune crossovers. This helps to prevent foot traffic from wearing down sand dunes. DHEC also is working with local governments to provide more beach access points along the coast. With the point of entry at one place, foot traffic that could damage protective dunes is eliminated.

Charleston Harbor Project

For the past five years, the Charleston Harbor Project has been conducting hundreds of experiments and studies in an effort to come up with a Special Area Management Plan for the Charleston Harbor. The primary goals of the Harbor Project are simple: to maintain and enhance the quality of the environment in the Charleston Harbor estuary system; to maintain the wide range of water uses and natural resources of the systems; and to anticipate and address potential problems before adverse impacts occur. The reason to address these issues now is clear: If you do not take steps to save the harbor, it will cost a lot more in the future. For example, Boston Harbor is now in an 11-year cleanup program. The cleanup program is estimated to cost between \$3.5 and \$4 billion. Tampa Bay has been trying to clean up its harbor after years of neglect. So far, it has run up a price tag of \$2.5 billion. Continuing expenditures are estimated at more than \$200 million per year. In 1999, the Charleston Harbor Project will submit a final report on what needs to be done to protect the Charleston Harbor.

Shellfish

DHEC works closely with the Department of Natural Resources on cooperative procedures and actions for classification and management of molluscan shellfish growing waters. An important component of this effort is to find resources for the restoration of shellfish growing waters closed to harvesting for public health reasons. A memorandum of agreement between the agencies establishes a standing committee that focuses on restoration of water quality and habitat within shellfish harvesting areas. Additionally,

DHEC consults with other state and federal agencies as well as numerous citizen groups regarding shellfish-related environmental issues and concerns. These cooperative relationships have helped to maintain water quality conditions necessary for continued commercial and recreational harvesting of molluscan shellfish.

Salt Water Intrusion

As part of a cooperative study, DHEC and Georgia's Department of Natural Resources have developed an interim strategy for managing salt water intrusion in the upper Floridan aquifer of southeastern South Carolina and Georgia. As part of this groundwater investigation, the sound science initiative will focus on collecting technical data to improve our understanding of the location of salt water intrusion in the upper Floridan aquifer and the rate and direction in which it will move toward areas of withdrawal. This can be accomplished in part by observing and tracking current groundwater withdrawals as well as measuring an existing network of wells in the Low Country area. The investigation will address much of the water supply issues voiced by South Carolina, including the impact of pumping in Savannah on adjoining parts of South Carolina. Other aspects of the investigation will involve offshore drilling of freshwater sediments (off Hilton Head Island) in conjunction with the U.S. Geological Survey. DHEC is jointly participating in much of the technical work conducted in South Carolina and is also represented on the Upper Floridan Aquifer Technical Advisory Committee. The study will be completed in 2005 and will be the basis for a more permanent management plan for South Carolina and Georgia to share the resource.

Coastal Challenges

Population Growth

More and more people are moving to the coast of South Carolina. Most are attracted to the natural resources available in the coastal region. DHEC is working with communities to develop innovative approaches to manage growth and limit the impact on the environment. One way is to establish buffer

zones between development and waterways. Wide buffers absorb most of the pollutants that would have otherwise gone into the waterways. Developers are encouraged to build community docks as opposed to several private docks. This, too, will help to keep the waterways cleaner.

Beach Renourishment

Permanent annual funding for beach renourishment projects is critical to keeping South Carolina's beaches healthy. Beaches need periodic renourishment. However, beach renourishment is costly, so we need to ensure a steady source of money to pay for such projects.

Shellfish Restoration

Rapid coastal growth is taxing water quality restoration efforts within molluscan shellfish harvesting areas. Increases in nonpoint source impacts to growing areas have created needs for modified strategies for monitoring and assessment of these impacts.

Harmful Algae

There has been much interest in microscopic organisms found in estuarine waters along the Atlantic and Gulf coasts. *Pfiesteria piscicida* and other *Pfiesteria* species and *Pfiesteria*-like organisms are types of algae commonly known as "dinoflagellates." They have been blamed for a number of fish kills and human health impacts in several coastal rivers in mid-Atlantic states.

After outbreaks of *Pfiesteria* in 1997 in other states, a South Carolina Task Group on Toxic Algae was organized. Scientists, physicians, state and federal resource officials, communications staff and extension personnel began discussing methods of establishing statewide monitoring of estuarine waters and people working in these areas. The goal of this group is to gather and disseminate environmental and human health information concerning all toxic algae including *Pfiesteria*. The partners in the task force include DHEC, the S.C. Department of Natural Resources, S.C. Sea Grant Consortium, University of South Carolina, Clemson University, Medical University of South Carolina and National Oceanic and Atmospheric Administration. These institutions



are also involved with environmental and human health research and monitoring activities.

Pfiesteria piscicida and several other *Pfiesteria*-like organisms have been identified from South Carolina estuaries in very low concentrations. However, those organisms have not been identified as causing any fish kills or human health impacts. Monitoring, research and investigations into possible prevention will continue with collaborative efforts in the state. Until more information is developed, the public should not come in contact with water in areas of any large fish kill that might be encountered in estuarine waters. The public also should immediately contact DHEC about any fish kill so an investigation can be started.

Flooding

One common problem along the coast is flooding. In recent years, the flooding threat has increased because many drainage ditches constructed 10, 20 or even 30 years ago have never been cleaned. As a result, dirt and debris clog drainage areas and have caused flooding to occur where it was not a problem in the past. DHEC has set up a committee of county leaders, engineers and environmentalists to come up with ways to clean up the hundreds of miles of clogged ditches along the coast to eliminate some of the flooding problems.

Ocean Water Quality Monitoring

Ocean water quality monitoring with appropriate advisories to the public will be a challenge in future years. DHEC will continue to seek funding to expand this program. Plans are to implement a program in which DHEC will use rainfall levels to predict bacterial levels and issue advisories, reducing the amount of monitoring needed.



Land

How we evaluate our land resources

Land. South Carolina has more than 30,000 square miles of it. We build our homes, schools and places of work on it. We grow our food on it. In short, we live on it — and off of it.

Land in South Carolina, as land across the nation, is used for all kinds of waste disposal. Every day we make and throw away large amounts of waste from our homes and work-places. This waste includes municipal solid waste (MSW) created at our homes, infectious waste produced in hospitals, hazardous waste generated during industrial activities, and radioactive waste produced by industries and power plants. Extensive mining also takes place in the state. Mining can impact land use and must be regulated to assure that the land is restored after the mining activities are completed.

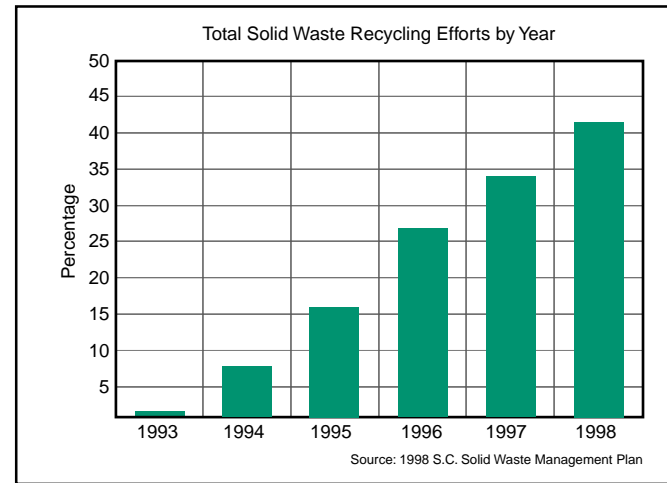
As our population grows, so does our reliance on natural resources such as land. The basic limitation of this resource requires us to ask: How can we best use and protect each unique piece of land? How can we reclaim what was used or abused before? To help answer these questions, DHEC collects and evaluates many different kinds of information about how our daily activities impact our environment.

What does this information tell us about our land resources?

Solid Waste

South Carolinians generated more than 10 million tons of solid waste in fiscal year 1998. This solid waste, which includes all residential, commercial, industrial, construction and demolition, and special waste, is the most we've ever produced and the sixth straight year our generation rate increased. Residential waste, also known as MSW, makes up the largest part of the waste stream. Most of the MSW in South Carolina is disposed of in landfills. Interestingly, the

number of MSW landfills in the state has dropped from more than 60 in the late 1980s to 19 in 1999. While there are fewer landfills, the landfills that remain are much larger and often serve a region instead of a single community.



Hazardous Waste

Many of the products that we use and enjoy today — from laundry soap to bicycles to computers — are made in high-tech factories using thousands of chemicals. Some of those chemicals become part of the product, while others are used as cleansers or to create chemical reactions. Many chemicals, however, are often left as waste. Overall, between 10 to 15 percent of all waste generated in the United States is chemically hazardous.

In fiscal year 1997, the latest figures available, 420 generators in South Carolina produced 226,081 tons of hazardous waste. Hazardous waste must be moved by one of the 300 hazardous waste transporters permitted by DHEC. Most of the material is liquid and can be recycled or burned as a fuel. Solid hazardous waste can be reclaimed, used as a fuel for energy recovery, destroyed in an incinerator, or be disposed of in a specially designed landfill. The eight com-



Public Participation

Effective environmental protection is enhanced by watchful, caring and informed citizens. Responding to citizen complaints is a district office priority, recognizing that callers are an extension of our surveillance system. Expanding public notice of permit applications and regulatory decisions is being promoted. Public forums are increasing, including site-specific and community information exchange, at the request of citizens and initiated by staff.

In 1998, DHEC held a series of environmental forums with top agency management at seven locations across the state. The public was invited to voice environmental concerns and to offer suggestions for improving the environment and agency operations. One recurring theme in the forums included the desire for more public notice of permit applications. DHEC management is using the forum input in policy discussions and decisions.

DHEC also was represented in each of a series of town meetings sponsored by the Sierra Club. Common ground for

continued on page 11

mercial hazardous waste receiving facilities located in the state include a hazardous waste landfill in Sumter County, two cement kilns in Orangeburg and Dorchester counties and five treatment or recycling centers.

Site Cleanup

DHEC maintains a list of more than 600 sites that are contaminated or might be contaminated by hazardous substances. This list includes 25 federal Superfund sites called National Priority List (NPL) sites at which DHEC is assisting the U.S. Environmental Protection Agency (U.S. EPA) in addressing the extent of contamination. The rest of the list includes state sites that are being investigated and cleaned up using state funding from the S.C. Hazardous Waste Contingency Fund. These sites came about through years of disposing of wastes, including hazardous substances, on the land. This practice was common before laws prohibited it and has resulted in sites with soil and groundwater contamination.

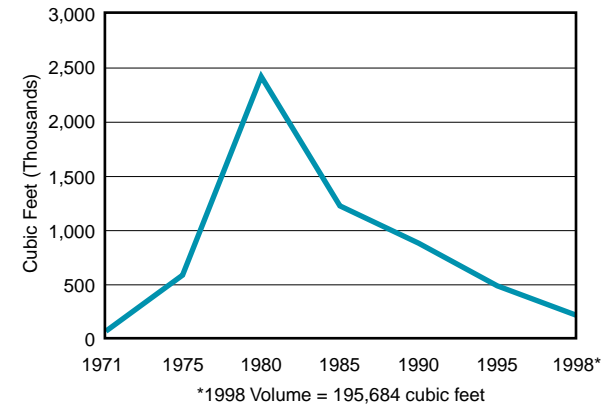
Radioactive Waste

Barnwell's Low-Level Radioactive Waste (LLRW) Facility, owned by the state and operated by Chem-Nuclear Systems, is one of only three commercial LLRW facilities currently operating in the United States. Since its opening in 1971, about 27.5 million cubic feet of waste have been disposed at the facility. Through the years, 117 acres of the 235-acre facility have been developed for disposal. Of this total, 100 acres have been used, leaving 16.6 acres or a remaining capacity of 3.17 million cubic feet. Given that about 250,000 and 300,000 cubic feet of waste are disposed of each year, the facility could continue to operate for about 10 more years. In addition, about 9 million curies of radioactivity have been disposed of at the site. The activity remaining, however, is only about one-third of that due to continuing radioactive decay.

Nuclear Facilities

South Carolina receives more than 60 percent of its electricity from four nuclear power production facilities in the state. In addition, the Westinghouse Nuclear Fabrication Facility in Columbia produces fuel for nuclear reactors, and

Chem-Nuclear Disposal Volumes



Radioactive Waste Disposal Enhanced

Two major improvements in recent years have greatly enhanced environmental protection at the Barnwell Low Level Radioactive Waste site. The first is the use of engineered concrete vaults to contain all waste. The vaults provide structural support for the waste containers inside and for the trench caps that will be built on top of the trenches. Designed to last 300 years, the vaults also keep water and soil away from the waste packages and reduce radiation exposure to workers.

The second major improvement is the construction of enhanced caps that are placed over groups of completed trenches. Five caps have been built since 1990 ranging from 10 to 26 acres each. These multilayer caps are designed to virtually eliminate water infiltration through the trenches and thereby reduce the possibility of groundwater contamination with radionuclides. Before the facility is closed, the entire area used for disposal will be capped.

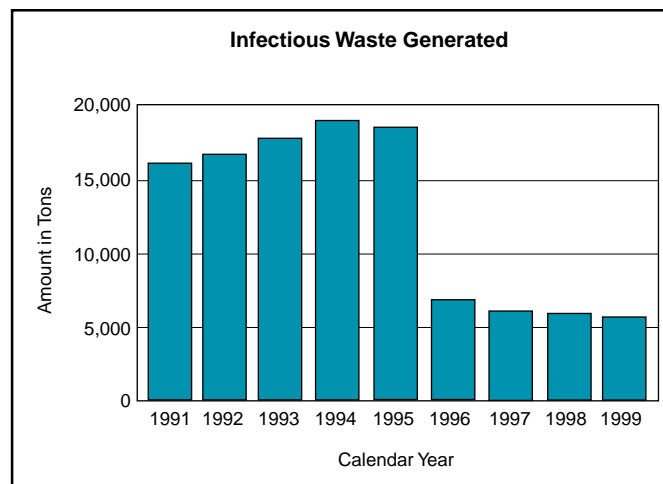
the U.S. Department of Energy's Savannah River Site has operations involving radioactive materials and waste.

Mining

The mining industry in South Carolina produced 15 mineral products in 1997 with a total value estimated at \$507 million, according to the U.S. Department of the Interior. South Carolina ranked first nationally in the production of vermiculite, third in kaolin, fifth in crude mica, sixth in clay and 10th out of 13 gold-producing states. Currently, about 60,000 acres of land are covered under mining permits in the state. In 1998, 21 new mine operating permits were issued covering more than 1,500 acres.

Infectious Waste

Infectious waste is waste produced by the health care system in the diagnosis, treatment, immunization and care of people or during research. Since the Infectious Waste Management Act went into effect in 1991, infectious waste producers have had to register with DHEC and provide an estimate of the amount of waste they produce. Since 1995, the annual estimate continued to show a steady decrease. Why? Many hospitals decided to close their incinerators rather than install improvements required to comply with more stringent air pollution requirements. In fact, the number of incinerators has dropped from about 30 to seven. When hospitals began to send more waste offsite for treatment, the additional cost encouraged waste reduction efforts and better separation of infectious waste. These efforts have resulted in a reduction of more than half the amount of infectious waste produced since 1995.



What are we doing to improve?

Site Cleanup

During 1998, the Site Assessment and Remediation Program (SAR) continued to investigate and clean up the state's uncontrolled hazardous waste sites. The program prioritizes sites by investigating and testing to determine the potential risk to the public health and the environment. This step is followed by remediation. SAR staff worked on 98 sites in South Carolina this past year. These 98 sites include 24 federal Superfund sites, 20 sites at the Savannah River Site and 54 state sites. The process of cleaning up contaminated sites is lengthy and costly. During fiscal year 1998, DHEC spent more than \$2 million investigating and cleaning up sites in South Carolina. This amount does not include what was spent by the U.S. EPA at federal National Priority List sites in the state.

Two sites addressed in 1998 drew widespread attention: the Hollis Road and South Lake Drive/Old Orangeburg Road sites in Lexington County at which drinking water was contaminated with solvents and petroleum products. DHEC paid for residents to receive bottled water until an alternate supply could be provided, paid for the connection to alternate water supplies for more than 100 homes, and is working toward connecting more than 100 more homes to alternate water supplies.

continued from page 10

joint efforts to improve the environment included supporting past compliance legislation and ways to increase public participation.

DHEC also convened an environmental work group comprised of internal and external partners as part of the Turning Point planning initiative to strengthen the public health infrastructure. Recommendations addressed issues of growth management, rural environmental health, community involvement and environmental justice. Public comment will be incorporated into this work in developing a plan for implementation, funded by the Robert Wood Johnson Foundation.

Waste Minimization

Reducing the amount of waste we produce is important as we try to conserve and protect our natural resources. Businesses and industries also are learning the importance of reducing the amount of waste created in production by focusing on reduction on the front end. Pollution prevention continues to gain attention as the cost of toxic trash treatment, storage and disposal rises.

The Center for Waste Minimization helps businesses and industries evaluate their waste streams and operations for alternatives to reduce waste. Staff are available for telephone consultations or on-site assessments. In 1998, center staff made 81 on-site visits and 210 consultations. These non-regulatory services are free of charge. The center's representatives can be reached at (803) 898-3971 during normal business hours.

In addition, DHEC has expanded its efforts in recovering funds spent from the Hazardous Waste Contingency Fund so that money will be available to clean up additional sites.

The Voluntary Cleanup Program continues to grow. This program encourages responsible parties to come forward and clean up their sites without having to resort to expensive and protracted litigation. To give non-responsible parties (that is, prospective purchasers) an opportunity to buy and clean up contaminated sites, the Brownfields program was established in 1995 as a part of the Voluntary Cleanup Program, and it continues to grow. Any contaminated site that is not already subject to cleanup by DHEC permit or order may be cleaned up under the voluntary program. DHEC continues to expand its efforts in community relations and public participation, recognizing the importance of hearing from the public concerning decisions being made about sites in their communities.

Recycling

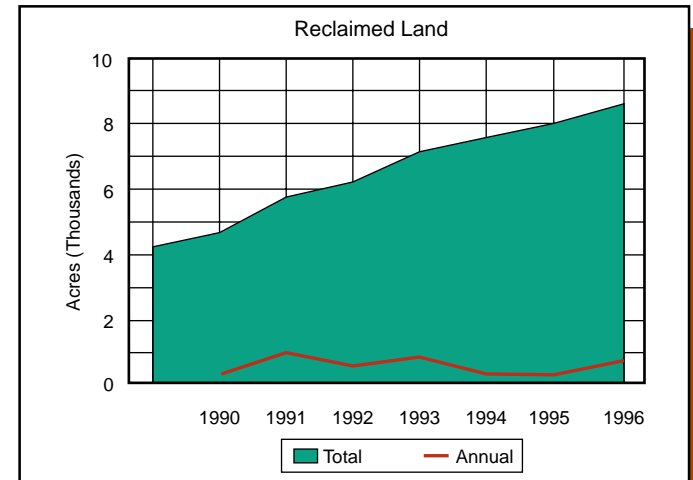
Recycling, which saves landfill space and natural resources, is working in South Carolina. The total amount of solid waste recycled in the state increased for the sixth consecutive year. More than 4.2 million tons of solid waste, or 42 percent of the total waste stream, was recycled in fiscal year 1998. More than 10.7 million tons of solid waste have been recycled since fiscal year 1993, the first year county governments began reporting. The increase in the recycling rate can be attributed to strong local programs working in partnership with DHEC's technical assistance, grant and education programs.

South Carolina also has one of the nation's best used oil recycling programs targeting do-it-yourself (DIY) oil changers. More than 923,000 gallons of used oil were collected from DIYers in 1998. In addition, the state has developed the nation's first "full-service" program for DIYers by collecting used oil filters and bottles. In 1998, more than 132 tons of used oil filters and 49 tons of used plastic oil bottles were recycled.

Education and Awareness Programs

One of DHEC's centerpiece environmental education efforts is "Action for a cleaner tomorrow: A South Carolina Environmental Curriculum Supplement." More than 8,500 teachers have attended "Action" workshops since the curriculum supplement, developed by DHEC, the S.C. Department of Education and others, was introduced. The original focus of "Action" was solid waste issues, but the curriculum supplement now includes air, water and energy lessons. The curriculum supplement and workshops are provided at no cost to teachers and schools.

In addition, DHEC has developed a nationally recognized and award-winning public service campaign. The "Recycle Guys" promote recycling, buying recycled and used oil recycling across the state on television and the radio.



Mine Reclamation

Reclamation is the rehabilitation of mined land for useful purposes and for the protection of natural resources in the surrounding area. Mine lands have been reclaimed to a variety of land uses. Grassland, forestland, agriculture, lakes and ponds, commercial and industrial development, wetlands and wildlife management are many of the land uses of a mine site once it has been reclaimed. Reclamation of a mine site ranges from simple grading and revegetation to the complex

closure of a gold mine, where monitoring may extend many years after the mining ends. To ensure completion of reclamation following mining, DHEC currently has more than \$22 million in reclamation bonds on file. Overall, there were 2,400 acres of mined land reclaimed in 1998, bringing the total reclaimed mine land amount to more than 11,900 acres since the beginning of the Mining and Reclamation program.

A nonpoint source pollution control demonstration project at W.R. Grace's Scott-Garrett Mine recently won the Interstate Mining Compact Commission 1999 Reclamation Award for non-coal minerals. This is one of the oldest kaolin mines in the state with several pre-law mining areas located within the permit area. The project involved a steeply sloped 25-acre site where massive erosion had carved gullies and ravines. About 0.25 acre-feet of sediment was lost each year from this site. A variety of Best Management Practices, including erosion control fabrics, brush berms, riprap check dams, sediment traps and basins, as well as vegetation, fertilization and mulching were used to reclaim this site.

Land and Waste Challenges

Site Cleanup

Challenges always exist in any active and growing program. This is true of the Site Assessment and Remediation Program. DHEC must continue to investigate and remediate sites in timely and cost-effective ways and continue to encourage responsible parties to address their own problems voluntarily. Brownfields redevelopment must be encouraged so that industries, commercial operations, and even residences may be located on previously used sites, returning them to productive use and protecting and preserving our greenfields for future generations. A bill incorporating the Voluntary Cleanup Program into the S.C. Hazardous Waste Management Act is pending in the S.C. General Assembly. One goal is to see it passed to further encourage voluntary cleanups and Brownfields redevelopment. Working together with the people of South Carolina, we can restore contaminated land to productive use.

Household Hazardous Materials

On Earth Day 1999, DHEC began offering a \$50,000 environmental grant to establish a program dedicated to the proper management of household hazardous materials.

While regulation of commercially generated hazardous waste will always be a priority, more and more attention is being given to household hazardous materials. Household hazardous materials are leftover products found in everyone's homes that are difficult to properly dispose of, including paint, pesticides and cleaning products. The U.S. EPA estimates that each household generates more than 20 pounds of household hazardous materials each year and has an accumulation of as much as 100 pounds.

In the past, one-day collection events were held nationally to increase awareness of the problems associated with the accumulation of household hazardous materials. Today, most experts agree that permanent collection sites are more cost effective than one-day collection events and provide an ongoing solution. Currently, Florida, Iowa, Minnesota, Oregon and Washington are among the states that have set up permanent collection programs. In addition, some local governments in North Carolina and Alabama have set up permanent collection facilities.

Charleston County set up a permanent collection site to recycle paint several years ago and recently expanded its operation to take more difficult materials, including pesticides, solvents and other household chemicals. Most South Carolina counties, however, do not have programs to manage household hazardous materials simply because of the high cost. Many programs around the state are using their solid waste convenience centers (where recyclables and waste are collected) for the collection of harder-to-manage waste, such as oil, oil bottles, oil filters, oil and gasoline mixtures, antifreeze, latex paint and lead-acid batteries. But many of these programs just offer a few of these services at the convenience centers.

DHEC's grant will fund one local government to act as a host for a pilot collection site. The center will be located at an existing, staffed recycling center. Funding will cover the cost of a fireproof building, collection containers, operating supplies, promotional activities and contract costs for disposal or recycling. The recipient will be selected based upon need and the ability to provide a suitable site as well as being able to operate and promote the center on an ongoing basis.

Savannah River Site

In the early 1950s, during the postwar era of World War II, the Savannah River Site, SRS, was developed with the mission of producing weapons-grade materials for national defense. Since the end of the Cold War, SRS's mission has changed to remediation and managing DOE complexes' nuclear material. Measures are taken to ensure that site activities and operations do no harm to the health and environment of South Carolina citizens. DHEC accomplishes this mission through routinely inspecting facilities for compliance with regulations; issuing permits; conducting routine radiological and non-radiological monitoring of the environment, and independent monitoring on and around the site.

Impacts from past operations and activities at the site, along with growing concerns from surrounding communities, established the need for additional monitoring by the state. Oversight monitoring activities involve sampling air, rainwater, groundwater, surface water, sediments, milk, fish and vegetation for various

continued on page 14

radiological constituents. In 1998, a total of 2,677 samples were collected on and around SRS for analysis. This independent source of information is critical to maintaining the public's confidence in the DOE's ability to protect public health and the environment. This information is used to educate the public on monitoring activities around SRS and provide recommendations to the DOE for improving its environmental monitoring programs.

Nuclear Emergency Planning

The six nuclear facilities in South Carolina that have operations involving radioactive material and two in other states near South Carolina's borders are required to have detailed nuclear emergency response plans. The state must be prepared to respond to any incidents involving radioactive materials, whether at these fixed facilities or involving materials being moved through South Carolina. In addition to regular exercises and periodic communication drills, all shipments of spent nuclear fuel rods are monitored as they travel through the state. In fiscal year 1998, DHEC participated in 51 partial or full-scale exercises with fixed nuclear facilities throughout the state. DHEC also planned for and participated in the monitoring of both domestic and foreign spent fuel shipments. No public health or environmental impacts resulted from any of these activities.

There are more than 600 used oil recycling centers, located in all 46 counties, where do-it-yourselfers can recycle those items generated in a typical oil change. Since the banning of used oil from landfills, proper collection has increased dramatically. In 1991, 46,000 gallons of used oil were collected throughout the state. By 1998, that yearly figure increased to 923,962, bringing the eight-year total to more than 4.6 million gallons.

In addition, the collection figures for oil filters and motor oil bottles increased to 132 tons of filters and 49 tons of motor oil bottles for 1998.

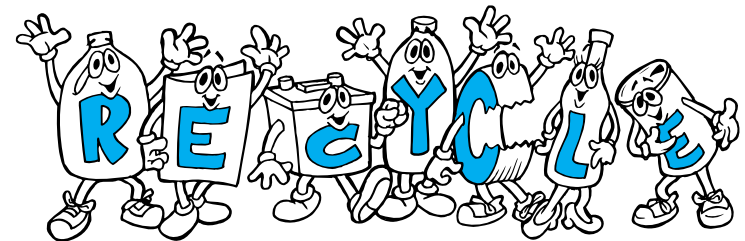


Managing Landfill Capacity

Another issue facing DHEC is managing landfill capacity within the state. Although the number of landfills has decreased, the overall capacity has increased. The challenge is to ensure that this capacity is managed so that long-term landfill capacity remains available without a proliferation of new landfills and without a large influx of waste rapidly using the available capacity. One way to ensure the availability of long-term capacity is to establish an overall limit on the amount of waste being received by landfills. To accomplish this, DHEC intends to promulgate a "Demonstration of Need" regulation that will be used to determine the need for new or expanded solid waste disposal sites.

Consistency with Local Plans

Consistency with local solid waste management plans is also an issue. Any application for a new or expanded solid waste management facility is required to be consistent with the local solid waste management plan. The challenge is providing guidance to the counties and regions so that their solid waste management plans are specific in addressing the needs of the counties and regions.



Water

How we evaluate our water quality

Surface Water

South Carolina has approximately 29,898 miles of rivers, 366,576 acres of lakes, and 682 square miles of estuaries. These waters are “classified” to define the uses that must be protected and the water quality standards that must be maintained to protect each of those uses. The classifications include support of fish and wildlife, domestic and industrial water supply, recreation, agriculture and navigation. To monitor and assess surface water quality, sampling is performed monthly at approximately 250 locations. Samples are collected at an additional 300 locations during summer months (May through October) when surface water quality conditions are most critical.

Section 303 (d) of the Clean Water Act requires states to compile a list of surface waters not meeting water quality standards in spite of existing controls on pollution sources. It further requires states to develop Total Maximum Daily Loads (TMDLs) of pollutants for all such impaired waters. The list of impaired waters is updated every two years. EPA provides guidance to states on how to determine impairment. Waters are listed for impairment of one or more of the following uses: aquatic life, recreation (swimming) and fish consumption. Data from DHEC’s surface water monitoring sites are reviewed for compliance with water quality standards. Fish tissue data are assessed for risks from consumption. Data from other agencies and data produced by certified laboratories are also reviewed.

Groundwater

To ensure detection of changes in groundwater quality, an ambient groundwater quality monitoring network has been in place since 1987. Groundwater sampling for general chemistry is conducted each year from selected public and private wells. Each network well is sampled once every five years. Wells sampled are representative of the state’s major coastal

plain aquifers and the Piedmont bedrock aquifer.

The quality of groundwater beneath potential contamination sources is a vital concern. Monitoring groundwater quality at municipal, industrial, and hazardous waste landfills and underground storage tank and wastewater lagoon locations is a state priority. Where groundwater contamination exists at abandoned sites as well as permitted sites, efforts are made to determine how widespread and significant the contamination is, what action should take place to control and correct the contamination, and to make sure any risk of exposure is minimized.

Public Drinking Water System Regulatory Monitoring and Oversight

There are currently 2,935 public water systems in South Carolina. Yet the majority of South Carolinians (more than 3 million) receive their drinking water from only about 1,500 of these systems. This number represents those water systems that meet specific federal criteria. South Carolina’s monitoring program is very unique in that DHEC actually conducts and analyzes the vast majority of mandated monitoring for contaminants such as bacteria, chemicals, metals and radiological particles. DHEC also conducts routine inspections, called sanitary surveys, that evaluate the physical condition of a water system as well as the quality of the water it produces.

NPDES Regulatory Compliance Monitoring and Oversight

The National Pollutant Discharge Elimination System (NPDES) permitting program, established by the Clean Water Act, is designed to protect water quality in streams receiving discharge. Permits are written for a worst case scenario, namely a maximum discharge into a water suffering natural stress such as low flow and hot weather. Because the worst case is rarely achieved, a violation of a permit limit does not necessarily mean there is an impact on the water quality.



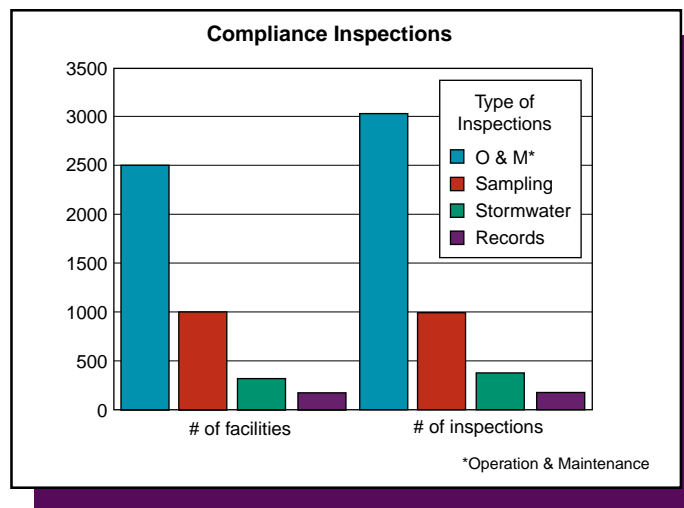
Partnerships to Protect Water

Protecting our coastal resources presents a growing challenge given the increasing population and development in coastal counties. Recent studies have shown that even modest amounts of urbanization in a watershed are likely to restrict the harvesting of shellfish. In 1995, a group of concerned citizens in Beaufort County, now called the Clean Water Task Force (CWTF), became alarmed about this issue.

In 1996 the CWTF held several meetings that brought together citizens, state and federal agency staff, and technical experts to discuss the impacts to coastal waters from urban development and other land use practices, point and nonpoint source runoff, and boating. Other topics included methods to control stormwater discharges and existing water quality monitoring and assessment programs.

The CWTF then prepared a final report entitled *A Blueprint for Clean Water: Strategies to Protect and Restore Beaufort County's Waterways* (CWTF, 1997). One recommendation was for Beaufort County and

continued on page 17



However, all violations, whether it's a discharge limit violation or failure to submit paperwork, are tracked and acted upon.

Permits require the holder to monitor their discharge and report those results to the state. Overall facility compliance is determined using a combination of these facility reports and DHEC's own facility monitoring and inspection program. DHEC performs several types of inspections to ensure the facility's wastewater treatment program is operating effectively. They include effluent (discharge) sampling inspections, record review inspections, and operations and maintenance inspections. To ensure other potential sources of wastewater do not adversely impact state waters, DHEC also performs numerous agricultural operations and maintenance inspections as well as stormwater inspections. Based on the number of facilities in the state and the number of inspections performed, DHEC maintains an overall inspection coverage of 112 percent annually.

What does this information tell us about our water quality?

Surface Water

When the data are summarized for different uses, water quality is shown to be suitable for the support of aquatic life in 83 percent of state waters and recreational use in 80 percent of state waters. The most frequent water quality problem in rivers and streams is the occurrence of elevated fecal coliform bacteria concentrations, which can affect the suitability for recreational use. In lakes, elevated heavy metal concentrations most often affect use.

Of the sites found to be impaired in 1998, 80 percent had fecal coliform bacteria densities greater than the state water quality standard. Fecal coliform bacteria are themselves generally not harmful, but their presence indicates that surface waters may contain pathogenic microbes. Recreational (swimming) and shellfish consumption uses are determined to be impaired where densities exceed state standards for these uses.

The most common problem in estuaries is usually concentrations of dissolved oxygen below state standards. The lower concentrations may be a normal and natural occurrence for these coastal waters.

The most common source of pollution in all waterbodies is nonpoint source runoff that contains contaminants and sediment. Nonpoint source pollution occurs when water runs over land or through the ground, picks up pollutants, and deposits them in surface waters or groundwater.

Groundwater

Our ambient monitoring shows that groundwater quality in South Carolina historically has been excellent and provides a safe source of drinking water. The several major aquifers differ in their specific concentrations of naturally dissolved salts derived from minerals. Systematic differences also occur within individual aquifers by separate areas and along their regional flow patterns in coastal plain aquifers. Concentration of dissolved minerals generally increases as the groundwater flows toward the coast. Groundwater in the upper coastal plain is generally very low in concentration of dissolved salts and tends to be poorly buffered and acidic.

By contrast, Piedmont groundwaters seem to obtain a substantial portion of their dissolved mineral content rapidly as they percolate downward through the overlying saprolite or regolith “soil-like” aquifer, although some continued changes occur in water chemistry as groundwater migrates through the deeper bedrock aquifer. These data are summarized in an annual published report entitled *South Carolina Ambient Groundwater Quality Monitoring Network*.

While overall groundwater quality is excellent, releases of chemicals to groundwater can and do occur. As of July 1998, there were 3,619 documented impacts to groundwater. The majority of releases occurred from leaking underground storage tank systems that provide petroleum and chemical products used by individual consumers and industry. The second most common source is accidental releases (e.g., spills and leaks) to the environment, which eventually impact groundwater. These are usually petroleum-based products used for either machinery maintenance or manufacturing. Leaking pits, ponds, and lagoons cause the third most significant source of contamination to groundwater. This type of containment in the past was used by many industries to dispose of or treat byproducts generated during the manufacturing process. A summary of the data is published as an annual report in the *South Carolina Groundwater Contamination Inventory*.

Public Drinking Water Quality

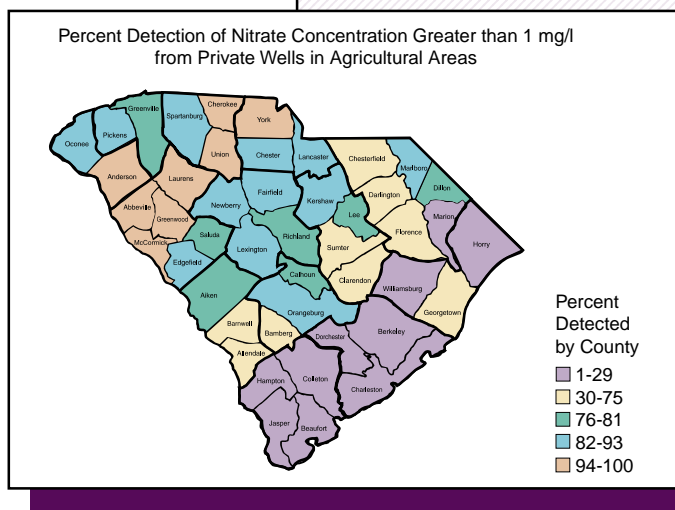
Over the past five years, the total number of violations incurred by water systems continued to decline, with calendar year 1998 having the fewest number of violations (360) to date. More than 95 percent of water systems had no water quality violations during 1998, and most of these violations represented one-time occurrences that did not indicate poor water quality nor unsatisfactory operation and maintenance. This is supported by the fact that more than 99 percent of South Carolina’s public water systems are in significant compliance. Even more details about South Carolina’s public water system compliance are available in the *1998 South Carolina Public Water System*

Nitrates In Groundwater

Investigations are characterizing the natural variation that exists across the state in the vulnerability of groundwater to contamination. It is somewhat easy to transport contaminants to groundwater in areas where water flows downward from the surface. Those areas that instead lie far from where the water enters are much more protected from contamination by natural hydrologic conditions. These investigations analyze groundwater for chemical tracers that have come from the surface in recent times. Dissolved nitrate, found often in only trace amounts, comes from widely applied fertilizer and organic waste or from the soil. Areas where nitrate is commonly detected in groundwater are also those areas where other types of contaminants can readily enter as well. Other tracers include tritium, an isotope that has occurred in all rainfall since the first nuclear weapons tests in the 1950s.

Groundwaters in regional aquifers with longer flow distances are tested using radiocarbon, which was originally dissolved from the soil as water percolated downward to the aquifer. Here the groundwater’s age is calculated in a variation of standard radiocarbon dating. Groundwater that is old (and it can be over 20,000 years

old) is shown to be naturally isolated and of much lower natural vulnerability to contamination.



continued from page 16

the Town of Hilton Head Island to contribute to a baseline assessment of Broad Creek and the Okatee River. The Broad Creek watershed has extensive urban and suburban development that drains into a relatively small waterbody. The Okatee River is a comparably sized and relatively undeveloped watershed, but existing and planned developments may significantly alter this waterbody in the future.

The study began in 1997 through joint funding provided by the Beaufort County Council and DHEC. The study is a cooperative effort being conducted by DHEC, the S.C. Department of Natural Resources and the National Marine Fisheries Service, Charleston Laboratory, which is now part of NOAA’s National Ocean Service (NOS). The study involved sampling to assess water quality, sediment and biological conditions. The study should evaluate the effects of all activities on the quality of these water bodies.

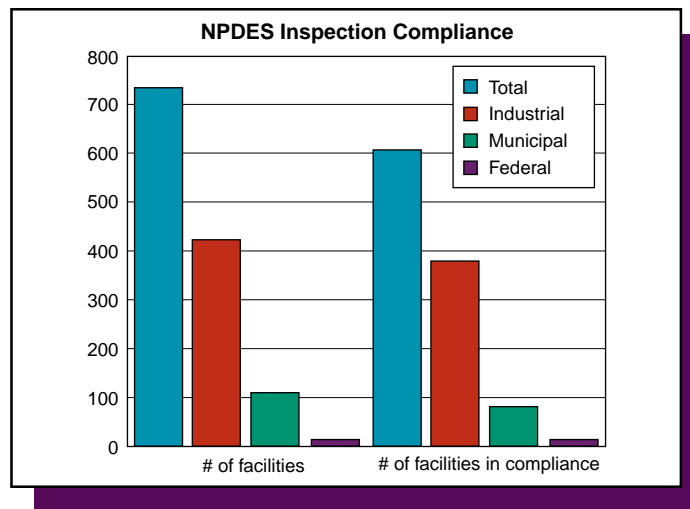
Sample collection is complete, and data analysis and report preparation are under way.

State Revolving Fund

Faced with growing national needs for water pollution control funding, Congress created the Clean Water State Revolving Fund (CWSRF) as part of the Clean Water Act Amendments of 1987. The South Carolina CWSRF, managed by DHEC with financial administration by the State Budget and Control Board (BCB), has operated since that year and has traditionally provided for low-interest loans for building or upgrading wastewater treatment works. Section 319 of the Clean Water Act also provided for nonpoint source management activities. More than \$164 million in project funding has been loaned by the CWSRF.

The Drinking Water State Revolving Fund (DWSRF) is a newer loan program generated by the 1996 amendments to the Safe Drinking Water Act. Under identical management, it is similar in general scope to CWSRF, except that its more limited capitalization is more focused on facilitating and/or maintaining compliance with drinking water regulations. Also, DWSRF does not yet enjoy the CWSRF's unique

continued on page 19



Annual Compliance Report. This report can be obtained through the DHEC Bureau of Water Web site located at www.state.sc.us/dhec/eqc/water or by contacting the Bureau of Water.

NPDES Discharges

NPDES facilities are grouped into municipal, industrial and federal types. For 1998, 75.1 percent of municipal, 86.4 percent of industrial, and 95.7 percent of federal NPDES discharges were in compliance with inspection requirements. When reviewing those major NPDES facilities that are in compliance with discharge effluent limits and/or are under enforcement orders with schedules for corrective action, the percentages of compliance are 93 percent for municipal, 98 percent for industrial, and 99 percent for federal facilities.

What are we doing to improve?

Unified Watershed Assessment

A great deal of progress has been made in improving the quality of our waterways since the federal Clean Water Act was passed more than 25 years ago. However, we still have much work to do. Recognizing that additional resources and tools are needed to accomplish the original goal of the act —

that all waters be “fishable and swimmable” — the U.S. Environmental Protection Agency, the U.S. Department of Agriculture (USDA) and several other federal agencies released the *Clean Water Action Plan* in 1998.

The *Clean Water Action Plan* aims to accelerate the restoration of our water resources by strengthening public health protection, targeting community-based watershed protection efforts to high priority areas, and providing new resources to control polluted runoff. The plan contains specific commitments by federal agencies that will help DHEC’s efforts to protect and restore South Carolina waters. These commitments include expanding control of stormwater runoff, establishing numeric water quality criteria for nutrients, and strengthening incentives for private land stewardship.

A key component of the *Clean Water Action Plan* is the Unified Watershed Assessment. The concept of the Unified Watershed Assessment is to bring state and federal agencies together to assess the overall health of our watersheds and to identify common priorities for watershed restoration and protection.

DHEC’s Bureau of Water and the USDA Natural Resources Conservation Service (NRCS), working with other state and federal agencies, have identified five top priority watersheds that are the focus for restoration efforts in 1999-2000. Under Section 319 of the Clean Water Act, U.S. EPA awards grants to DHEC to fund projects that prevent, control or abate water quality problems associated with polluted runoff (nonpoint source pollution). The Bureau of Water is distributing these funds to local governments, colleges and universities, nonprofit organizations and other state agencies to achieve water quality improvement in priority watersheds.

Watershed Reporting

DHEC has available the first round of watershed documents for all of the five major basins in the state — Savannah-Salklehatchie, Saluda-Edisto, Catawba-Santee, Pee Dee, and Broad. Updates for Savannah-Salkehatchie, Saluda, and Edisto basins also are available. Full reports are available on DHEC's Bureau of Water Web site at www.state.sc.us/dhec/eqc/water.

Septic Tank Concerns

About half of South Carolina's population depends on septic tanks to safely treat wastewater. When properly placed, designed, constructed and operated, septic tanks are effective and efficient in wastewater treatment. However, because of the large number of septic tanks in use — some densely spaced, some on minimally suitable sites, and some on waterfront property — there are legitimate concerns that septic tank systems may be having adverse impacts on water resources.

Groundwater and surface water quality and the effect on the public's health are particular concerns. Groundwater serves as drinking water for about 40 percent of the state's population. When groundwater or surface water quality in an area is impaired, especially by bacteria, local septic tanks are often blamed when no other obvious source is found. Concerns are twofold. Are the failing septic tank systems responsible? Or worse, are properly installed and operated systems responsible because of inadequate construction standards? To address these concerns, a technical committee reviewed extensive scientific and engineering data on septic system performance related to construction specifications and requirements. The completed report, *A Technical Evaluation of Onsite Wastewater Disposal in South Carolina*, has been forwarded to the committee responsible for drafting revisions to the septic tank regulations. The report contains recommendations for better assuring that the main contaminants of concern (pathogen microbes, nitrate and phosphate) are sufficiently treated by the direct and indirect means of greater vertical or lateral offsets of drainfields, routine inspection and maintenance of systems, and an inspector and installer training program.

Antidegradation

Antidegradation for water quality protection is a DHEC priority. Antidegradation, an important component of the water quality standards, requires maintaining existing uses and the water quality to support those uses. Antidegradation also allows no lowering of high-quality waters by a discharge until it is shown that the discharge is necessary, that there has been intergovernmental coordination and public participation, and the adverse effects of water quality have been minimized. An applicant for a new or expanded wastewater discharge to surface waters must demonstrate the discharge is necessary by showing that other alternatives are not feasible. Alternatives include reuse or recycling, using another location, connecting to an existing facility, or land application. DHEC, with assistance from local councils of governments, determines if the discharge alternative is necessary to accommodate economic and social development. Further intergovernmental coordination and public participation are provided through the NPDES public notice process.

Individual Residential Drinking Water Wells

Although public drinking water supply wells require a permit from DHEC, wells installed for residential use historically have not. There are water well construction requirements in DHEC regulation, and well drillers are required to be licensed through the S.C. Department of Labor, Licensing and Regulation, but these requirements have not provided adequate protection to public health. Wells not properly grouted (sealed) can and do result in the well becoming contaminated with bacteria or chemicals. DHEC began developing regulations for residential wells in early 1998 to provide for a much larger inspection presence in the field, which should reduce the number of improperly constructed wells; those regulations will be implemented in 1999.

Source Water Protection Program

As a result of the 1996 amendments to the Safe Drinking Water Act, protection of source waters has become a national priority. South Carolina has developed a Source Water Assessment Plan to assess all public drinking water sources in order to identify potential threats so protection efforts can be taken. The results of a pilot study conducted in 1998

continued from page 18

feature of being able to fund projects based on readiness to proceed regardless of priority list ranking.

CWSRF project types include construction of wastewater treatment systems, nonpoint source pollution control, wetlands and estuary protection, and other watershed projects. The interest rate on the loans is always below the current market rate. Repayments made on the loans are recycled to fund additional water protection projects. Up to \$3 billion dollars is available annually on the national level for SRF capitalization grants. South Carolina's 1999 capitalization grants are expected to be approximately \$13.8 million for the CWSRF, and approximately \$8 million for the DWSRF. The majority of the CWSRF funds have been used for the construction of traditional municipal wastewater treatment systems. Because of its flexibility, the CWSRF is well-suited to accommodate the watershed approach.

SRF loans are available to units of state, local, and regional government, and special purpose districts;

continued on page 20

however, current South Carolina law prevents loans from being made to private organizations and individuals. Local governments such as cities and counties and other units of government such as Soil and Water Conservation Districts, Councils of Government, and Water and Sewer Districts are encouraged to apply for SRF loans for nonpoint source projects.

Nonpoint source projects may include construction and maintenance of storm water management facilities, establishment of a storm water utility, purchase of land for wetlands and riparian zones, and implementation of source water protection assessments. For more information contact the State Revolving Fund coordinator at 803-898-4300.

provided the basis for the approaches outlined in this plan, which is currently under review by the U.S. EPA. A draft copy of the *South Carolina Source Water Assessment & Protection Program* is available to the public.

Surface Water Classification Upgrades

Some of the finest trout streams in the state were provided additional protection in 1998 through the water classification system. With assistance from fishery biologists at S.C. DNR, DHEC identified waters in Greenville, Pickens, and Oconee counties that support trout populations, but whose classification did not recognize that use. Forty-four streams and lakes in eight general areas were reclassified to either Outstanding Resource Waters (ORW), Trout-Natural (T-N), or Trout-Put, Grow, and Take (T-P,G,&T). These eight areas are Lake Tugaloo, the Oolenoy River, Lake Jocassee, Lake Keowee, Little River, the Middle Saluda River, the South Saluda River and the South Pacolet River.

The ORW classification will protect wild eastern brook trout populations; there are only about a dozen streams left in the state that support these fish. Many of these waters are located in the Jocassee Gorges area. Wastewater discharges are not allowed into ORW waters.

The T-N classification will protect other natural trout populations in the state. The T-P,G,&T classification will protect streams stocked by S.C. DNR with trout and allow water quality and temperatures to be maintained so that these trout will grow and remain from year to year. Both T-N and T-P,G,&T may receive only highly treated wastewater.

Water Quality Challenges

Nutrients

Nutrients are essential building blocks for healthy aquatic communities. Excess nutrients, especially phosphorus and nitrogen, overstimulate the growth of aquatic plants, including harmful algal blooms. Excessive growth of aquatic plants, in turn, can clog waterways, interfere with recreation, cause an imbalance of aquatic species, and lead to oxygen depletion. Nationwide, 40 percent of assessed rivers, 51 percent of

assessed lakes, and 57 percent of assessed estuaries are impaired by nutrient enrichment.

Sewage, lawn and crop fertilizers, and manure contain phosphorus and nitrogen, the nutrients most often responsible for water quality degradation. Currently, South Carolina has no numeric standards for phosphorus or nitrogen. The U.S. EPA has pledged to develop numerical ranges for acceptable levels of nutrients in surface water by the year 2000. Within three years of U.S. EPA issuance of criteria, all states must have adopted numeric nutrient standards.

Mercury and Fish Consumption Advisories

Substances such as mercury persist in the environment and can build up in fish tissue. When these contaminants are detected at concentrations that may cause concerns for the health of human consumers, DHEC issues a protective advisory. In South Carolina, fish from a number of rivers, lakes and ponds contain methyl mercury at levels high enough to prompt human health warnings and consumption advisories.

The source of mercury contamination in fish is not clear. Resources are needed to sample additional species and waterbodies for mercury and to identify the causes of mercury contamination in fish. For a list of waterbodies under advisories, visit the DHEC's Bureau of Water Web page at www.state.sc.us/dhec/eqc/water or call toll free 1-888-849-7241.

Impaired Waters

Improving the quality of impaired waters continues to be a DHEC priority. DHEC must develop Total Maximum Daily Loads (TMDLs) for all waters listed on the 303(d) list of impaired waters. Impaired waters are those still not meeting standards after minimum pollution controls are in place. A TMDL is the total amount of pollutants from all sources that a stream or river can accept and still meet its standards. If necessary pollution controls can be put into place to improve water quality, a TMDL will not be necessary. The goal is to improve as many waters as possible so that water quality standards are consistently met.

Keeping the Public Informed

Keeping the general public and regulated community informed about water issues will always be a challenge. DHEC has many excellent educational and outreach programs for school children such as Water Watch and Champions of the Environment. Several newsletters are available about drinking water, swimming pools, and runoff pollution.

A new Bureau of Water Web page (www.state.sc.us/dhec/eqc/water) provides timely information about programs and services. It also includes many necessary forms for those seeking permits as well as public notices for pending permits.

Storm Water Compliance

Regulations dealing with Phase II of the National Pollutant Discharge Elimination System (NPDES) storm water permit program are scheduled to be finalized in late 1999. Forty-six additional municipal and county entities would be required to have NPDES permits for their storm water systems to protect water quality. Construction sites of 1 acre or larger are proposed to be permitted by NPDES for storm water controls. To obtain compliance with the program, there must be an increase in DHEC inspectors and coordination between DHEC and the local governments that are responsible to DHEC for their programs. Funding must be increased significantly if the program is to be successful.

Agricultural Compliance

DHEC has adopted regulations for agricultural facilities. These new regulations give specific criteria for agricultural facilities to meet. While DHEC has an inspection program on agricultural facilities, more in-depth inspections will be necessary to ensure compliance with new state and federal requirements. Also, as South Carolina continues to grow, local governments will need to become more proactive with zoning and land use issues involving agricultural activities.

Water Quality Monitoring

Water quality monitoring efforts must be continually expanded and revised to address the additional potential impacts on our water resources as a result of increasing

population and subsequent development. There is a need for increased analytical capabilities to determine the presence of new chemicals at very low levels of detection. More emphasis on the health of aquatic communities through appropriate biological field studies is also a necessity. To adequately determine the quality of all of the state's waters requires significant expertise and resources. DHEC is continually trying to find ways to obtain the necessary resources to meet specific program needs and to identify trends in water quality changes through an extensive ambient network that fully represents the waters of the state.

Nonpoint Source Management

DHEC is updating its Nonpoint Source Management Plan to fulfill requirements of Section 319 of the Clean Water Act and Section 6217 of the Coastal Zone Act Reauthorization Amendments. The plan describes a framework for agency coordination and cooperation. It describes how the state will implement management measures and programs to control nonpoint pollution statewide. This update will address U.S. EPA guidance that requires these plans to address nine key elements for effective management of nonpoint source pollution. It also includes a five year action plan for implementation. Implementation depends upon close cooperation between federal, state and local agencies, as well as communities.



The Annual Consumer Confidence Report (CCR)

All Community Public Water Systems (PWSs) are required to prepare and distribute a CCR annually to their customers. The first CCR is due out by Oct. 19, 1999. Then each year, reports are required to be completed and disseminated by July 1.

South Carolina has adopted the U.S. EPA's regulation on preparing and disseminating the CCR. A state regulation was promulgated on Feb. 26, 1999.

The CCR is an effort by the public water system to inform their customers on the quality of water that the public water system is providing. The systems will be able to use this annual report to tell their consumers everything they want and need to know about the quality of their water. The report will include basic system information (address, telephone, etc.), source information (Where does the water come from?), source water assessments results, and levels of detected contaminants (if any).

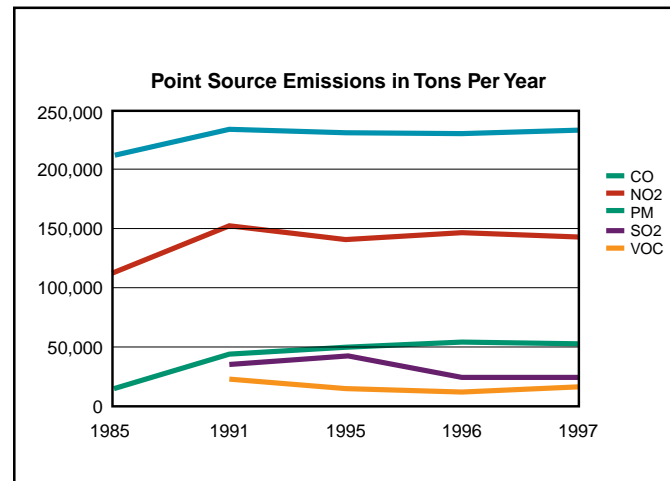
Air

How we evaluate our air quality

South Carolina's air quality has a direct effect on citizens and the environment. The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) that set levels for acceptable concentrations of specific criteria pollutants in the ambient (outdoor) air. Standards are set for pollutants that have adverse effects on public health or welfare and that are emitted from numerous and diverse sources. Two standards are established for each pollutant. The primary standard is set to protect public health. The Clean Air Act (CAA) mandates that the basis for primary standards be entirely health-related, without considering the cost of attaining that standard. The secondary standard is set to protect public welfare. Public welfare measures include effects on soils, water, crops, vegetation, buildings, animals, weather, visibility and economics, as well as personal comfort and well-being.

Health effects of air pollution vary greatly, depending on the exposure level, duration and pollutant. Very young children, the elderly and individuals with pre-existing respiratory or cardiovascular disease are especially vulnerable to air pollution. However, when the levels of certain pollutants are high, almost anyone who engages in moderate physical activity may be affected.

DHEC's Bureau of Air Quality is responsible for making sure the ambient air in South Carolina is protective of public health and the environment. The pollutants regulated under NAAQS include ground-level ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10} & $PM_{2.5}$), carbon monoxide (CO) and lead (Pb). Using the NAAQS as an evaluation tool, the U.S. EPA requires that each state implement a plan to meet the ambient air standards. South Carolina has such a plan in place. It is commonly referred to as the State Implementation Plan (SIP). South Carolina routinely revises the SIP to make sure the plan addresses specific needs to assure the state continues to comply with ambient air standards.



What does this information tell us about our air quality?

For the past decade, South Carolina has met all NAAQS. Because we enjoy such good air quality in South Carolina, most of us do not consider what it means to meet these standards. Air is a part of the environment with which we all have contact. Research has shown that high levels of SO_2 and particulates are associated with the most serious health effects. When these pollutants become lodged in the lungs, they can become a chronic source of irritation. Ground-level ozone also presents a great concern as it has been associated with impaired respiratory performance and other effects. Materials in the air, from pollen to pollution, impact us directly with each breath and indirectly through its influence on the health of the land and water.

Ambient Air Monitoring Network

DHEC operates and maintains a network of air samplers and monitors throughout the state. The U.S. EPA and DHEC

jointly choose 64 monitoring sites. This network is designed to meet both state and federal objectives. State monitoring sites are designed to meet the following objectives: to determine the highest concentrations expected to occur in the state; to determine representative concentrations in areas with high population density; to determine the impact by significant sources or categories of air pollution; and to determine general background concentration levels. Monitoring for the criteria pollutants, where NAAQS have been established, is performed. In addition to these ambient air monitors, Special Purpose Monitors (SPMs) provide specific air quality information about certain areas or pollutants. In addition, eight acid rain precipitation stations are maintained.

Emissions Inventory

Another means of quantifying air emissions in our state is through the emissions inventory process. Using standardized, nationally recognized emission methodologies, emission estimates are made for a variety of emission sources. These sources are point sources, area sources, biogenic sources and mobile sources. Point sources are stationary sources such as electric utilities, asphalt plants, steel mills, and most any large industrial source. Area sources individually do not make a significant contribution to air pollution levels, but collectively may have a large impact. For example, gas-powered lawn equipment, everyday materials such as paint, lighter fluid and some cleaning solutions are considered sources of area emissions. Biogenic emissions do not come from a man-made process. For example, forest fires, volcanic activity, pine trees and other vegetation are natural sources of air pollution. Examples of mobile sources are passenger cars, motorcycles, buses, trucks, trains, airplanes and construction equipment.

Permitting, Compliance Monitoring and Overview of Industrial and Commercial Activities

DHEC uses a permitting system for industrial and commercial facilities in the state to ensure compliance with state and federal laws and regulations. These regulations are designed to provide appropriate public health and environmental protection. All stationary sources of air pollution in

South Carolina must comply with permitting requirements before construction may begin. After construction has been completed and requirements satisfied, continuing compliance is assured through an operating permit. The U.S. EPA also has given authority to South Carolina to implement the federal operating permit program, commonly called Title V. One of the primary purposes of the federal Title V permitting program is to provide a comprehensive air quality operating permit for all major sources of air pollution.

Facility compliance with permit and regulatory requirements is tracked and verified through the review of monitoring data, record keeping, reports, source testing, continuous emission monitor certification, complaint investigation, and compliance inspections. Compliance investigations and enforcement actions serve to identify and remedy compliance problems.

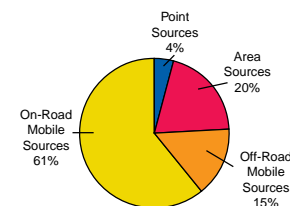
What are we doing to improve?

The Title V permitting program requires each state to issue a comprehensive air quality operating permit for all major sources of air contaminants. Nationally, each state is currently going through the process of issuing these permits. Unfortunately, a nationwide backlog on issuing these permits exists. The U.S. EPA has requested that each state commit to eliminating the backlog of Title V and other major permits (commonly referred to as conditional major permits) by December 2000. Once issued, these permits will become the primary compliance tool for each affected source. DHEC is committed to meeting the U.S. EPA's request to eliminate the backlog of Title V and other major permits by December 2000. Most, if not all, of the backlogged conditional major permits will be issued by the fall of 1999. Issuance of the remaining Title V permits will continue to be a priority. Accomplishment of this task will require a cooperative effort between DHEC, U.S. EPA, the affected sources and the public.

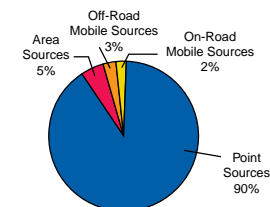
Another priority is to determine the appropriate reduction strategies for ground-level ozone. Efforts to obtain the modeling capability and emission information needed to support such a determination are under way.

Emission Sources

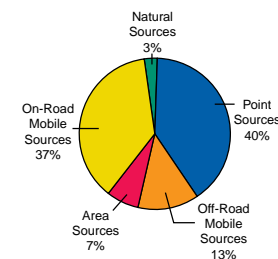
Carbon Monoxide



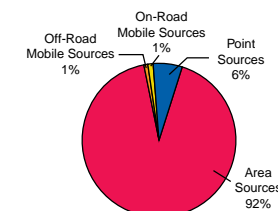
Sulfur Dioxide



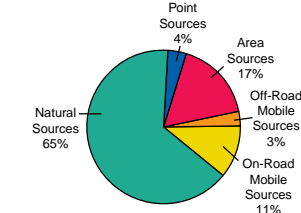
Nitrogen Dioxide

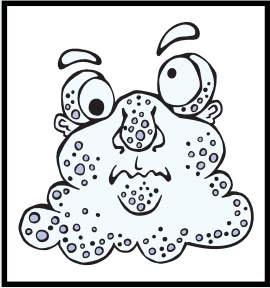


Particulate Matter



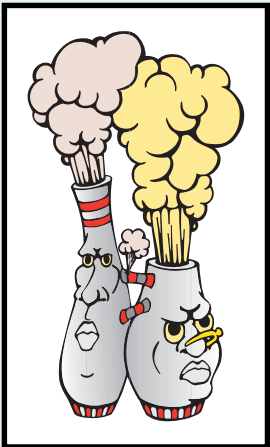
Volatile Organic Compounds





Ozone

Folks call me Ozone. I'm usually high in the sky, protecting you from the sun's strong rays. But when pollutants from cars, trucks or paint combine with sunlight, I can form at ground level. There, I can be harmful.



Sulfur Dioxide and Nitrogen Dioxide

We're the precursor twins. We rise from the stacks of paper mills, power plants and other industries. We can cause acid rain. We smell pretty bad, too.

In addition, we all need to be aware of our contributions to air quality problems, in particular ground-level ozone caused by our daily activities. In an effort to raise awareness, DHEC, along with various industrial and environmental interest groups, formed the Clean Air Partnership in January 1998. The goal of this partnership is to build awareness of the ground-level ozone problems facing South Carolinians and the contributions we are making as individuals. Air quality studies show that the majority of ozone-forming air pollution in our urban areas comes from cars and trucks. On May 4, 1998, the partnership began a Spare the Air Campaign. The campaign has three main components: education, ozone forecasting and an ozone alert network. The partnership plans to extend this program from the Midlands and Upstate areas to the entire state in coming years.

The ozone forecast and further information on air quality is available on the DHEC Bureau of Air Quality Web site at the following address: www.state.sc.us/dhec/eqc/baq/. To do your part to help reduce ozone formation, follow the tips below:

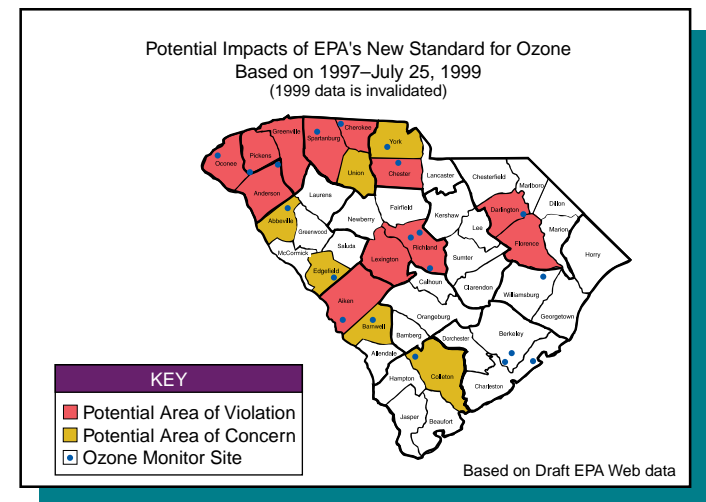
- Combine trips and limit unnecessary ones
- Walk or ride a bike on short trips
- Carpool
- Avoid driving during peak hours
- Keep your vehicle properly maintained
- Refuel after 6 p.m. and do not top off the tank
- Use gasoline-powered lawn equipment after 6 p.m.
- Save electricity

Air Quality Challenges

Revised Ground-Level Ozone Standard

South Carolina has met all national ambient air standards for the past decade. However, in July 1997, the U.S. EPA made the national air standards for ground-level ozone and particulate matter more stringent. South Carolina, like most states in the nation, will initially have difficulty meeting those new standards.

Ground-level ozone is not emitted directly from sources, but is formed when oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) react in sunlight. This complex reaction makes identifying an effective control strategy

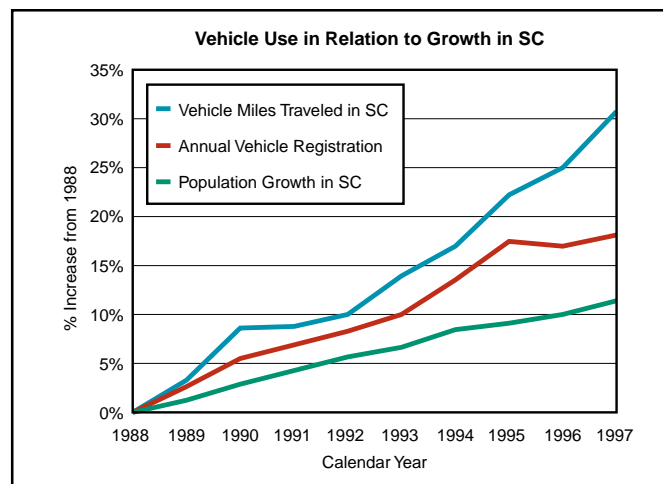


difficult. Furthermore, each area of the state has unique concerns that must be addressed. A complex air modeling computer program based on detailed emission information is used to determine the proper mix of NO_x and VOC controls on man-made emission sources that will most effectively remedy the ground level ozone problem.

Although much time and many resources are spent on regulating and permitting stationary sources in South Carolina, roughly half of all of the man-made air pollutants that form ground-level ozone comes from cars, trucks, and other off-road vehicles. As our state continues to grow, we will be evaluating many transportation issues such as use of vehicles, mass transportation, and cleaner fuels.

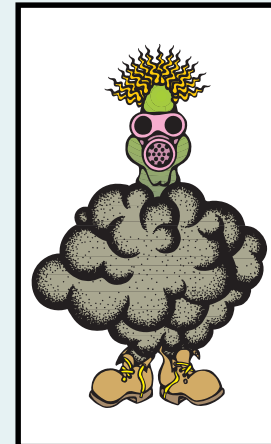


Many regulations reducing mobile source emissions are enacted on a national level and deal specifically with car and truck manufacturers. This national approach has been very effective in making new cars much cleaner. In fact, the emissions from automobiles have been reduced more than 90 percent from the cars made in 1970. The switch to unleaded gasoline is an example of a national program that has made a huge reduction in the amount of pollution our cars make. However, much of this improvement has been offset by the fact that we drive many more miles today than we did in 1970. Additionally, all vehicles are not properly maintained, nor does everyone drive a new, cleaner vehicle.



Carbon Monoxide

Carbon Monoxide here. You'll usually find me hanging around the exhaust pipe of your car or truck, but I can show up anywhere there's burning going on.



Particulate Matter

You can call me Dusty. I'm made of small bits of dust or other matter that can get caught in your lungs when you breathe.

Carbon Monoxide (CO)

Source: Incomplete combustion of fuels. Sources include wood and coal burning and vehicle emissions.

Health Effects: Decreased exercise capacity, visual impairment, difficulty in performing complex tasks, and reduced manual dexterity.

Lead (Pb)

Source: Motor vehicles burning leaded gasoline, smelters and battery plants. Indoors, lead may be in old buildings in the paint on the walls.

Health Effects: Anemia, intestinal cramps, fatigue, mental retardation, seizures, and behavioral disorders.

Nitrogen Oxides (NOx)

Source: Combustion sources such as power plants, industrial boilers and motor vehicles.

Health Effects: Increased susceptibility to upper respiratory infections.

Ground Level Ozone (O₃)

Source: Ozone is not emitted directly, but is formed when NOX and volatile organic compounds react in the presence of sunlight.

Health Effects: Irritant to mucous membranes, impaired lung function, coughing, nausea, headache and increased respiratory symptoms in individuals with asthma or emphysema.

Particulate Matter (PM)

Source: Motor vehicles, wood stoves, power plants and natural sources such as volcanoes and dust.

Health Effects: Reduced lung function, damage to lung tissue and greater risk of respiratory problems.

Sulfur Dioxide (SO₂)

Source: Combustion sources using a sulfur containing fuel; for example, coal, gasoline or diesel.

Health Effects: Impaired lung function and respiratory illness.

Environmental Services

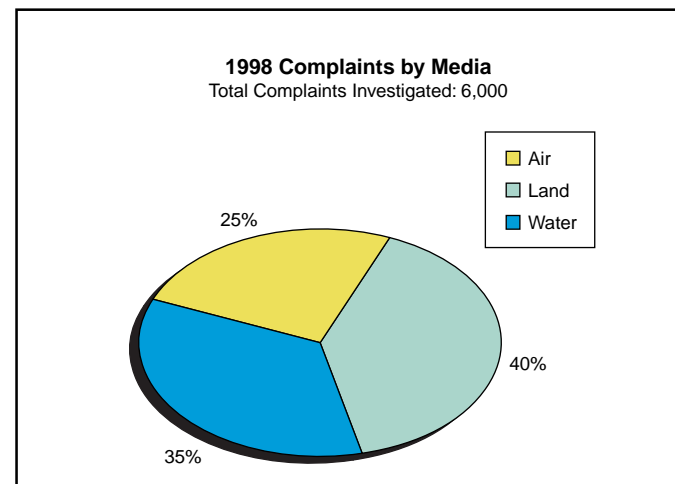
Local Solutions to Local Problems

All DHEC employees must have a commitment to and actively demonstrate the values and visions outlined in the agency's Strategic Plan. DHEC's vision of "**Local Solutions to Local Problems**" is demonstrated across the state daily by staff listening and responding to each community's unique concerns.

The 12 district offices are an extension of Environmental Quality Control's program areas conveniently located to serve communities throughout the state. Different communities have different needs and concerns. Knowing each community's needs and concerns is of utmost importance to DHEC and allows the agency to make better decisions. Identifying these needs is achieved by:

- 1) personnel providing leadership roles in the community (i.e., routine contact with local elected officials, environmental groups, civic organizations and representation on community advisory panels);
- 2) conducting community meetings and encouraging community involvement in agency decision making; and
- 3) responding to citizen complaints/concerns.

In 1998, there were 6,000 complaints involving the three primary environmental media. At least 40 percent of the complaints were related to land and waste management, 35 percent were related to water, and 25 percent were related to air. In the land and waste management media, 86 percent of the complaints involved solid waste issues such as illegal dumping and open dumps. In the water media, 30 percent of the complaints involved drinking water issues related to public and private wells and storm water; and in the air media, 60 percent involved open burning issues.



Protecting South Carolina Communities

Although requirements of permits and inspections of the regulated communities are avenues for actively protecting South Carolina communities, a more visible role is that of assistance during a natural disaster or accidental releases of hazardous materials. DHEC's 24-hour emergency response network of 74 emergency responders throughout South Carolina are well trained and ready at a moment's notice. Mock disasters and training exercises are routinely conducted to maintain the high level of expertise and readiness required for properly responding to the wide variety of emergencies that occur. DHEC also routinely meets with local officials, industry representatives and the public to identify hazards and plan the appropriate response for handling the environmental emergencies that could potentially occur in our communities. In 1998, DHEC's emergency responders covered 747 incidents in South Carolina, the majority of these involving transportation of petroleum-related materials.



Information Resources

Points of Contact at DHEC (Web site www.state.sc.us/dhec/eqc)

Bureau of Air Quality

(803) 898-4123

- Assures the air quality is within limits described by state and federal laws and defined in permits, licenses and certifications
- Monitors and samples air pollution sources and the ambient environment
- Designs and implements emission control regulations
- Issues construction and operating permits for regulated sources of air pollution
- Takes enforcement action when necessary

Bureau of Environmental Services

(803) 898-3978

- Performs inspections, responds to environmental emergencies
- Investigates citizen complaints, collects and analyzes samples
- Performs ambient air and radiological monitoring

Bureau of Land and Waste Management

(803) 896-4000

- Issues permits for mines and hazardous, infectious, radiological, and solid waste programs
- Monitors for compliance and assures proper waste disposal
- Responds to environmental emergencies
- Performs cleanups of contaminated sites

Bureau of Water

(803) 898-4300

- Conducts ambient and compliance monitoring to evaluate surface water, ground-water and drinking water
- Reviews applications, issues construction and discharge permits, operating approvals
- Develops regulations, provides water quality planning and management functions
- Enforces water quality laws such as the Safe Drinking Water Act and the Clean Water Act

Ocean and Coastal Resource Management

(843) 744-5838

- Assures compliance with the Coastal Zone Management Act
- Reviews permit applications in critical coastal zones
- Participates with the U.S. Army Corps of Engineers in beach renourishment projects

Agency Policies and Regulations

(803) 898-3300

Contact Alice Truluck if you have concerns or questions about DHEC's policies and regulations.

Center for Waste Minimization

(803) 898-3971

Contact Robert Burgess if your business would like assistance in reducing or preventing waste.

Coastal Permit Liaison

(843) 744-5838 ext. 133

Contact John Hensel to coordinate projects requiring both Environmental Quality Control and Ocean and Coastal Resource Management permits and to coordinate within OCRM for major projects requiring two or more OCRM approvals.

Educational Resource Center

(803) 898-3804

Contact Marie Horton if you would like materials and films about health and environment—some materials are suitable for children and classroom use.

Enforcement Liaison

(803) 898-3967

Contact William R. "Bill" Krecker to coordinate enforcement activities involving the state's regulated community.

Federal Facilities

(803) 898-3973

Contact F. Ann Clark to coordinate activities involving federal facilities. She is the primary contact for Department of Energy and Department of Defense issues.

Freedom of Information

(803) 898-3882

Contact Jody Hamm to submit Freedom of Information requests.

Health Hazard Evaluation

(803) 898-0862 or 1-888-849-7241

Contact this division if you have concerns about exposures to toxic substances.

Permitting Liaison

(803) 898-3957

Contact Willie J. Morgan if you have questions about how to coordinate any, or all, permits that businesses and industries need.

Community Liaison

(803) 898-3929

Contact Lill Mood if you have questions or concerns about environmental activities in your community and their possible health effects.

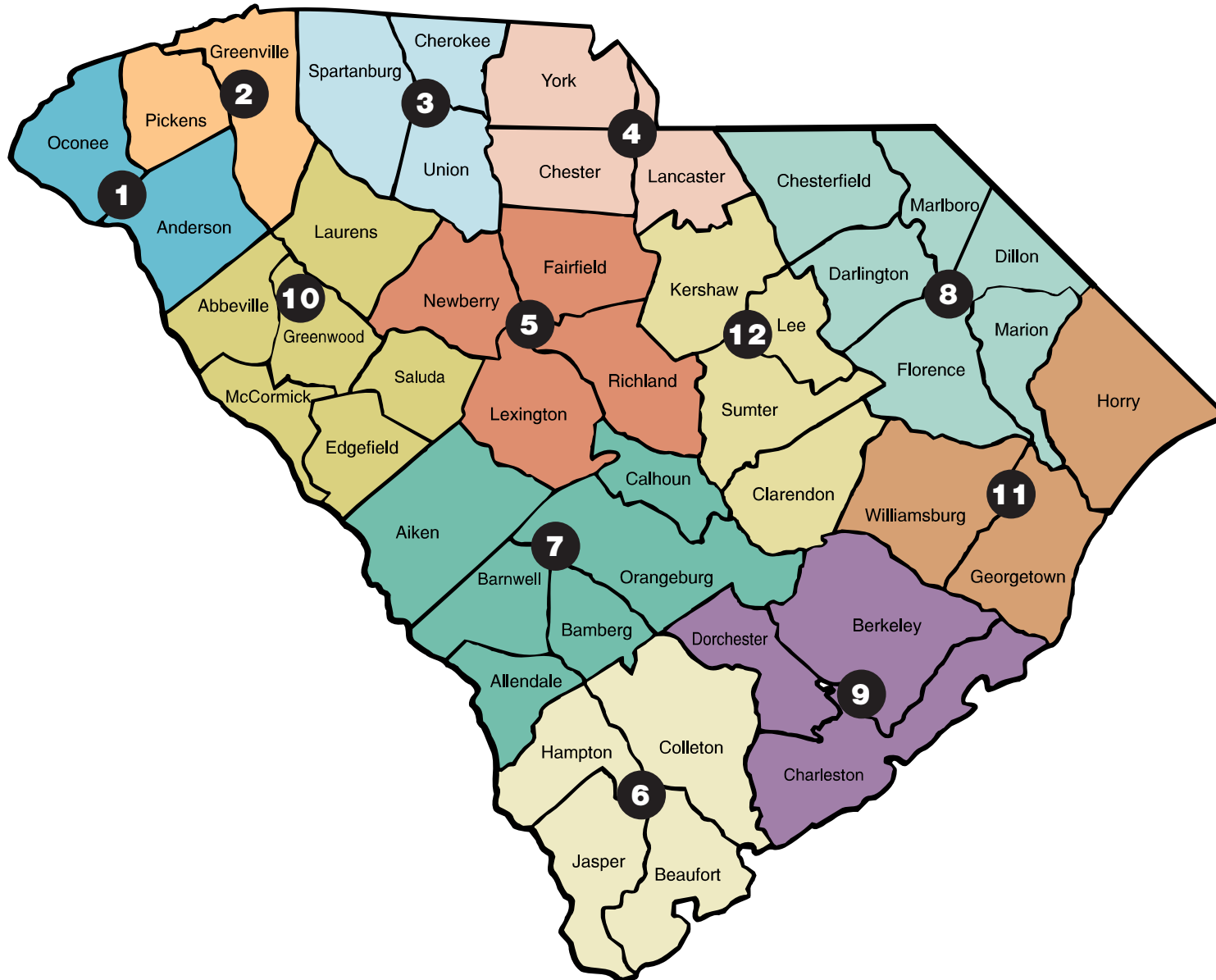
Small Business Assistance Program

(803) 898-3997 or 1-800-819-9001

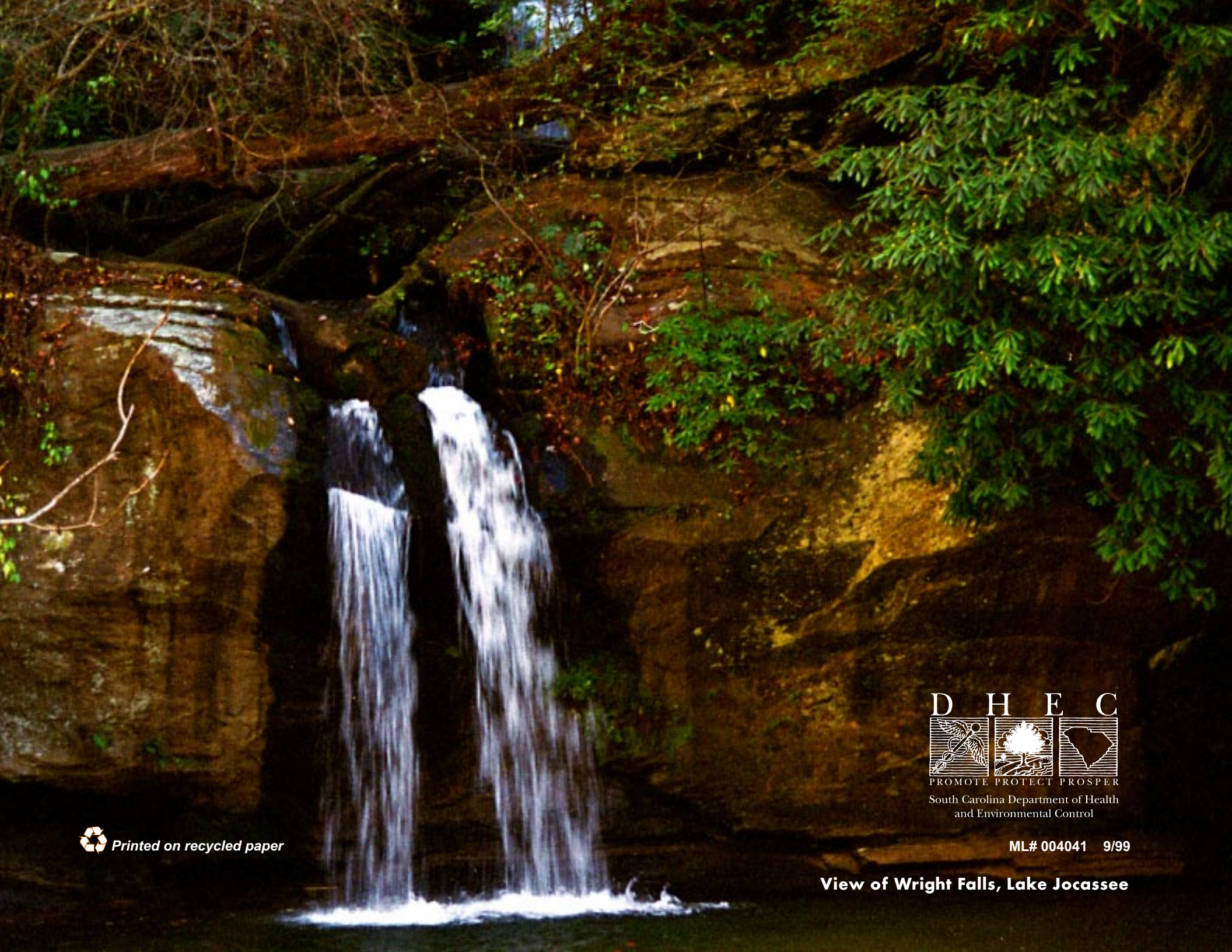
Contact Phyllis Copeland if you are a small business and would like to find out what regulations apply to you and would like assistance in complying with these regulations.


If you are interested in a classroom or civic organization presentation on an environmental issue, contact the individual bureaus listed above and ask for the outreach and education sections.

Environmental Quality Control Districts



1. **Appalachia I**
(Anderson, Oconee)
(864) 260-5569
2. **Appalachia II**
(Greenville, Pickens)
(864) 241-1090
3. **Appalachia III**
(Cherokee, Union, Spartanburg)
(864) 596-3800
4. **Catawba**
(Chester, Lancaster, York)
(803) 285-7461
5. **Central Midlands**
(Fairfield, Lexington, Newberry, Richland)
(803) 935-7015
6. **Low Country**
(Beaufort, Colleton, Hampton, Jasper)
(843) 522-9097
7. **Lower Savannah**
(Aiken, Allendale, Barnwell, Calhoun, Orangeburg)
(803) 641-7670
8. **Pee Dee**
(Chesterfield, Darlington, Dillon, Florence, Marion, Marlboro)
(803) 661-4825
9. **Trident**
(Berkeley, Charleston, Dorchester)
(843) 740-1590
10. **Upper Savannah**
(Abbeville, Edgefield, Greenwood, Laurens, McCormick, Saluda)
(864) 223-0333
11. **Waccamaw**
(Georgetown, Horry, Williamsburg)
(843) 448-1902
12. **Wateree**
(Clarendon, Kershaw, Lee, Sumter)
(803) 778-1531



 Printed on recycled paper



ML# 004041 9/99

View of Wright Falls, Lake Jocassee